



National Collaborating Centre
for Infectious Diseases
Centre de collaboration nationale
des maladies infectieuses

Purple Paper

Reflections on NCCID's Antimicrobial Resistance Work in the Past Year

Margaret Fast, Scientific Director, NCCID and
Kelly Bunzeluk, Project Manager, NCCID

In February 2010, the National Collaborating Centre for Infectious Diseases (NCCID) hosted a knowledge exchange consultation on community-acquired antimicrobial resistance. The consultation resulted in a draft action plan, with priorities identified in four key areas: leadership and governance, education and awareness, surveillance, and research. This Purple Paper summarizes the progress NCCID has made and the challenges we've faced in addressing the priority areas over the past year.

Background

Antimicrobial resistance (AMR) is a complex public health issue; one, like many in public health, that can be considered a *wicked problem*. The issue of AMR persists and has no clear solution or end-point; it requires ongoing re-definition as new information emerges, which inevitably calls for numerous different approaches over time.

Traditionally, AMR has been an issue that has mostly been considered in the context of hospitals. However, we know that resistant organisms are developing and spreading in communities. They have been seen in non-hospital settings, such as outpatient and long-term care facilities, and are impacted by policies and programs related to food production, veterinary services, the environment, and the pharmaceutical industry.

This complex, multisectoral nature of AMR poses challenges in terms of responsibility and communication. Public health and infectious disease experts need to share their expertise in surveillance and timely information must be provided that is population-based and includes antibiotic use data.

Training in the area needs to be early and ongoing. Schools of nursing, medicine, pharmacy, and veterinary medicine need to make education in this area a priority. Additionally, professional associations and employers need to provide continuing education opportunities.

Finally, national leadership in AMR is required. A structure must be established to coordinate training and continuing education, provide scientific/microbiological expertise and research leadership, assist with outbreak recognition and response, and develop strategies and timelines for actions and policies. Given the inherent complexity of AMR and the numerous sectors, organizations and levels of government involved, a collaborative approach to defining this structure is essential. Effective collaboration requires creating shared understanding of the issues, and shared commitment to all possible solutions. This process is not likely to be linear, is likely to be iterative and requires time.

The serious impact of AMR cannot be ignored. The lack of effective antimicrobials to fight infections caused by resistant organism has resulted in increased treatment costs, prolonged hospitalization, and even death. Additionally, the recent emergence of NDM-1 bacteria reminds us that organisms are constantly evolving to resist antimicrobial pressure. We must continue to dedicate time and resources to addressing this *wicked problem*.

Knowledge Exchange Consultation

The February 2010 knowledge exchange consultation focused on population-level interventions to reduce the development and spread of antimicrobial-resistant bacteria in community settings. The objectives were to:

- Expand understanding of the Canadian situation with respect to community-acquired antimicrobial resistance (caAMR), including its known epidemiology and current interventions to reduce risk and transmission;
- Identify and prioritize strategies for addressing caAMR in Canada;
- Clarify NCCID's role in contributing to the reduction of caAMR in Canada;

- Provide opportunities for meaningful collaboration between human, animal, and environmental health experts; and,
- Provide a venue for the exchange of national and international expertise.

Fifty experts from human, animal, and environmental health fields attended the consultation to share their experience and expertise in caAMR. Participants represented all areas of Canada, as well as the United States and European Union.

Most of the consultation was dedicated to creating a multi-stakeholder action plan tailored to Canadian caAMR needs, requirements, and limitations. Consideration was given to old and new models developed in Canada, as well as those used internationally. For example, the final report written by the Canadian Committee on Antibiotic Resistance, *The Pan-Canadian Stakeholder Consultations on Antimicrobial Resistance* (September 2009), was referenced numerous times as a starting point.

Consultation participants categorized the action plan recommendations into four key areas:

- Leadership and governance
- Education, awareness, and training
- Surveillance
- Research

For some recommendations, we identified and prioritized objectives, actions, and one-year tasks based on their need and potential impact. Responsible individuals or groups and timelines were then proposed.

Please see the [NCCID Consultation Notes](#) for more information on the action items that were identified and prioritized, as well as a list of consultation participants.

We recognized that not all identified actions could be accomplished in the identified time period or with the resources available. As tasks are accomplished, ongoing action items will be reviewed for feasibility and practicality.

The following sections describe NCCID's activities in the four key AMR areas since spring 2010.

Leadership & Governance

National Governance Structure

The top priority identified by consultation participants was the need to develop a national governance structure to address AMR issues in Canada. The Public Health Agency of Canada (PHAC), which was represented at the consultation, agreed to explore the idea further.

Leadership and governance are clearly over-arching priorities that require conceptual clarity before concrete actions are possible. While a governance structure was not formalized over the past year, some steps were taken to define a model that would be effective in addressing not only caAMR, but broader AMR issues. The structure must consider the varied perspectives of multiple sectors, including government (federal, provincial/territorial, and regional), non-governmental organizations, academia, and industry.

NCCID participated in a number of committees and task groups, all of which included representation from the federal government, to work toward formalizing a governance structure.

PHAC/NCCID AMR Working Group

As an important step toward coordinating governmental and non-governmental work in the area, Dr. Howard Njoo (PHAC) and Dr. Margaret Fast (NCCID) agreed to co-chair an interim AMR Working Group for one year, beginning in March 2010.

The PHAC/NCCID AMR Working Group agreed that it was important to focus on AMR issues in general, not just issues involving community-acquired strains of resistant organisms.

PHAC took on the responsibility for obtaining input and communicating among federal departments and agencies, as well as provincial/territorial ministries. NCCID plays a similar role, but focuses on

non-governmental agencies, professional associations, universities, and individual experts.

Since 2010, the Working Group has met six times, and has agreed to extend the collaboration for at least one more year. Key priorities for our Working Group over the past year included: approving terms of reference, determining a structure for obtaining input from non-governmental organizations, coordinating a *Technical Scan* document and expert review process, and planning Antibiotic Awareness Day (November 2010) and World Health Day (April 2011) activities.

NCCID AMR Expert Group

The NCCID AMR Expert Group was established in January 2011 and consists of approximately 25 independent experts and government observers. The purpose of the Group is to make recommendations on Canadian priority areas for work on AMR, provide direction on NCCID's AMR activities, and provide expert advice on the content of AMR knowledge products (including printed material and website content). The Expert Group met in February, March, and June 2011, with the next meeting scheduled in early September 2011.

Technical Scan

As an initial activity to begin to address the complexity of AMR in Canada, PHAC developed a draft report that summarized the findings of Canadian and international recommendations to address AMR. The analysis showed that recommendations for integration and coordinated action were consistent throughout the literature. A critical next step that was identified is to engage in broader consultations among federal government departments and agencies, provinces/territories, Canadian institutions, and national associations, using this report as a resource, begin to articulate a coherent way forward to address AMR in Canada.

The report was developed by reviewing recommendations made by Canadian and international governments and non-governmental organizations between 2005 and 2010.

Education, Awareness & Training

Comprehensive reviews

Three comprehensive reviews were commissioned by NCCID in 2008 to describe population-level interventions to address caAMR. At the February

2010 consultation, authors of the comprehensive reviews obtained feedback on the documents and incorporated the changes. The finalized documents were then translated, posted online, and distributed to individuals who had previously expressed an interest in NCCID's AMR work. Additionally, executive summaries of the comprehensive reviews and an overview of NCCID's work in AMR were published in the fall edition of the *Canadian Journal for Infectious Diseases and Medical Microbiology*.

Topics included:

- Antimicrobial use and resistance in pigs and chickens
- Alternative practices to antimicrobial use for disease control in commercial feedlots
- Strategies to control caAMR among enteric bacteria and methicillin-resistant *Staphylococcus aureus*.

Antibiotic Awareness Day

A professional and public awareness event was organized on November 18, 2010, with a focus on reducing antibiotic use by targeting the doctor-patient interaction. The event was modelled on and supported by similar events in the United States (Get Smart About Antibiotics Week) and the European Union (Antibiotic Awareness Day), and partners included: PHAC, the Association of Medical Microbiology and Infectious Disease (AMMI) Canada, the Canadian Foundation for Infectious Diseases, the Community and Hospital Infection Control Association, and Canadian Paediatric Society. Antibiotic Awareness Day activities included:

- *Bilingual website (www.AntibioticAwareness.ca)*: Information for health care providers, patients, and parents; recent news articles; archived webinars.
- *Printed prescription pads to improve communication between doctors and patients*: Encourages symptomatic treatment of viral respiratory illnesses to reduce the use of antibiotics.
- *'Script' for doctors*: Based on research conducted by the European Centre for Disease Prevention and Control (ECDC), the 'script' provides information on how to talk to patients about requests for antibiotics for viral infections.
- *Webinar series*: Eight live webinars on various AMR topics were hosted on Antibiotic Awareness Day. The webinars have been archived and

remain the most popular page on the website. The webinars were transcribed and are currently being translated.

- *Professional colloquium*: A colloquium featuring three local expert speakers was hosted at the University of Manitoba on November 19, 2010.
- *News release and other promotions*: A bilingual news release was issued through a newswire service, and partner organizations promoted the day through electronic newsletters, membership communications, and email reminders.

The English Antibiotic Awareness Day webinars reached their maximum capacity, with many participants commenting positively on their value and format. The webinars are archived on www.AntibioticAwareness.ca, and remain the most accessed page of the website.

Plans are underway for an Antibiotic Awareness event in Canada in November 2011. This year's event will build upon the resources and partnerships developed last year and may span a full week.

For more information about Antibiotic Awareness Day, please contact us (nccid@icid.com) for a copy of the report, Antibiotic Awareness Day Review.

Communications and Education Task Group

The Communications and Education Task Group on Antimicrobial Resistance was formalized from the Antibiotic Awareness Day planning committee, and included all planning committee members along with several additional Canadian health organizations. The purpose of the Task Group is to increase awareness of the issue of AMR and what can be done to reduce the emergence and spread of antimicrobial resistant organisms, coordinate

communication and education activities, and provide advice on communication and education priorities for antimicrobial resistance, with a particular focus on professional education. Established in January 2011, the Task Group met bi-weekly while planning World Health Day activities and worked closely with the NCCID AMR Expert Group to coordinate key messages and develop educational material.

The Communications and Education Task Group is continually working to expand its membership. Current members include:

- National Collaborating Centre for Infectious Diseases
- Public Health Agency of Canada
- Association of Medical Microbiology and Infectious Disease Canada
- Canadian Foundation for Infectious Diseases
- Community and Hospital Infection Control Association Canada
- Canadian Paediatric Society
- Do Bugs Need Drugs?
- Canadian Institute of Public Health Inspectors
- Canadian Public Health Association
- Canadian Pharmacists Association

World Health Day

For World Health Day 2011, the World Health Organization launched a worldwide campaign on antimicrobial resistance and its global spread. As part of the Canadian response, the Communications and Education Task Group developed and distributed a poster and four new factsheets for professionals. A media release was issued and an awareness event for professionals was hosted in conjunction with the AMMI-CACMID annual conference. Each of the participating Task Group organizations actively supported the day through newsletters to members, media interviews, and website promotions.

Professional Education

NCCID has been working to increase awareness of antimicrobial resistance through presentations about its AMR activities at the following professional events:

- AMMI-CACMID Annual Conference (Montreal, April 2011)
- National Collaborating Centres Spring Training (Niagara, May 2011)

- 5th National Community Health Nurses of Canada Conference (Halifax, May 2011)
- Community and Hospital Infection Control Association Canada 2011 Conference (Toronto, June 2011)
- Canadian Public Health Association 2011 Annual Conference (Montreal, June 2011)
- 77th Canadian Institute of Public Health Inspectors National Education Conference (Halifax, June 2011)

Concerted effort is being made to reach the diverse sectors impacted by AMR issues. We will continue to expand reach by promoting our work through various professional associations and non-governmental organizations.

Surveillance

At the February 2010 consultation, participants agreed that while much work was being done in the area of AMR surveillance, efforts were fragmented and there was insufficient communication across the country. A priority identified at the consultation was to obtain a better understanding of the information that is currently available. The NCCID AMR Expert Group is considering the value of an inventory of ongoing AMR surveillance programs, as well as a description of information technology solutions for collecting and amalgamating surveillance data, carriage data, and antibiotic usage data.

After identifying strengths and gaps in AMR surveillance in Canada, a priority might be to develop a system to monitor priority organisms/diseases. Consideration will be given to a pilot project that provides data on a sample organism (for example, methicillin-resistant *Staphylococcus aureus*).

Research

Little progress has been made by NCCID in the area of AMR research. One possibility in upcoming years will be for NCCID to coordinate an inventory of AMR researchers, projects, and funding agencies. This information could be used to inform research gaps and may encourage funding agencies to address those gaps.

Lessons Learned & Next Steps

Antimicrobial resistance is a complex issue involving multiple sectors and stakeholder groups. Not only is it a human health issue, it is also an issue impacted by decisions made by agricultural scientists and food producers, veterinarians, environmental experts, pharmacists and pharmaceutical companies, and policy-makers at all levels. All stakeholders need to understand the varied positions in order to have intelligent dialogue about the different interpretations of the issue and to exercise collective intelligence about how to address it.

A great deal of work has been done in Canada to prevent the emergence and spread of antimicrobial resistant bacteria. However, the complex nature of the issue has resulted in some fragmented or duplicated activities, inadequate communication among sectors, and little coordination. Over the past year, NCCID has been working with a variety of government agencies, professional associations, non-governmental organizations, and independent experts to bring people together to address some of these gaps.

The complex, multisectoral nature of AMR requires an ongoing, concerted effort by government and non-government organizations. While the task of addressing wicked problems like AMR may seem daunting, NCCID is focusing its efforts on knowledge translation and collaborative partnership activities.

Working collaboratively requires a great deal of time and energy. While progress appears slow, many gains have been made. A number of working groups were established to obtain expertise from the government, communications, and individual perspectives. This resulted in a new website and numerous education products, as well as events recognizing Antibiotic Awareness Day and World Health Day. Additionally, an analysis of national and international gaps was produced, and it is anticipated that feedback on the document will

highlight opportunities and priorities for all stakeholders in upcoming years.

In the short-term, NCCID will focus on fostering and supporting partnerships and sharing evidence about what works. We will continue to coordinate and participate in the PHAC/NCCID AMR Working Group, the NCCID AMR Expert Group, and the Communications and Education Task Group on AMR. These groups, along with individual partnerships at national and international levels, will continue to guide our priorities. Additionally, through activities like Antibiotic Awareness Week, we will reach professionals and the public with the best evidence we have to reduce the development and spread of AMR.

These small accomplishments, added to the great work being done by others, may lead to great gains in addressing antimicrobial resistance.

If you have any suggestions or feedback on how we can more effectively combat AMR in Canada, or if you would like to participate on one of our working groups, please contact us at nccid@icid.com.

Production of this document has been made possible through a financial contribution from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.